

NORTHARD EXHIBIT 45



Prairie Island Nuclear Generating Plant

Turbine Building Flooding
Regulatory Conference
July 13, 2010

Opening Remarks

- Mark Schimmel
 - Site Vice President, Prairie Island Nuclear Generating Plant, Northern States Power Company – Minnesota
 - Introductions

Opening Remarks

- Purpose of this conference
 - Discuss our licensing and design basis for internal flooding; what commitments we made
 - Discuss our understanding and position of our licensing commitments
 - Describe the significance determination evaluation we performed
 - Discuss corrective actions we will implement

Opening Remarks

- Agenda
 - Internal Flooding Licensing and Design Basis
 - Performance deficiency discussion
 - Significance Determination evaluation
 - Corrective action to improve the program

Management Technical Summary

- Mark Huting

- Fleet Program Engineering Director
- Responsible for PRA including the Significance Determination Process (SDP)
- Responsible for 28 other programs
- Significant involvement with this evaluation
- Extensive resources employed

Licensing Basis

- Consisting of responses to the 1972 AEC DeYoung and Giambusso letters
- DeYoung letter focus on internal flooding
- Giambusso letter focus on high energy pipe break (HELB)

Performance Deficiency

- Licensing basis documentation for turbine building flooding is minimal
- Silent on issues such as flooding caused by consequential pipe failure from HELB pipe whip
- Turbine building internal flooding basis was:
 - Building design allows for significant flooding prior to safety related equipment damage, alarms and sump pumps also support recognition
 - Mitigation is achieved for the bounding main circulating water break through operator action to trip pumps
- Review of licensing documentation did not discover any noncompliances from plant design
- Design has been improved from original basis to add an automatic circulating water pump trip on high condenser pit water level
- Information learned from SDP evaluation is being used to reduce risk but is not a requirement of our license

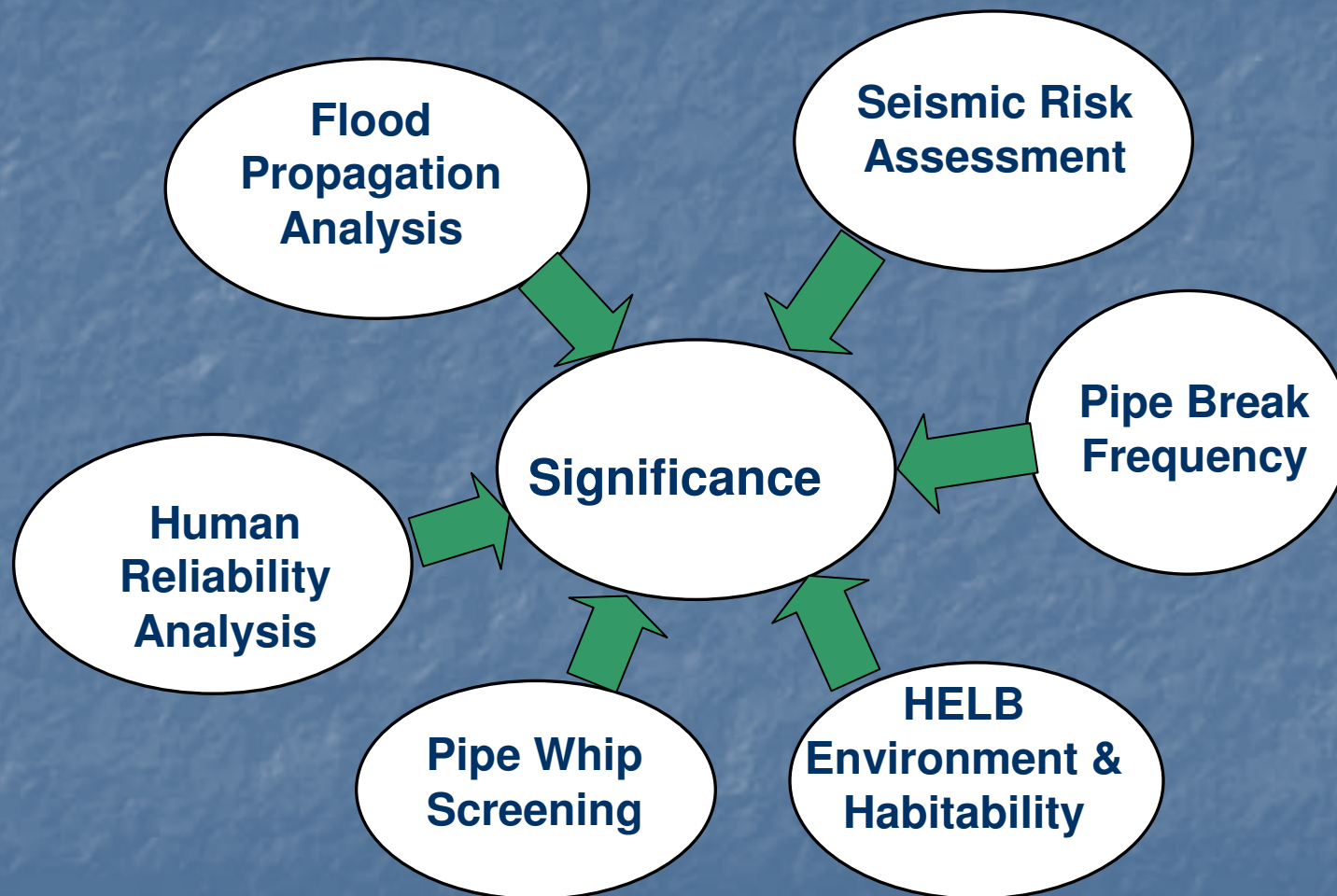
Significance Determination

- Actual Prairie Island licensing commitments are minimal making it difficult to determine if a performance deficiency exists
- Performance Deficiency was initially determined based on conservative interpretation of regulatory documents
- SDP was performed to determine safety significance
- Because PRA is used in evaluation, beyond Design Basis events are considered and for this evaluation are the major contributors to risk
- Results of SDP is low to moderate safety significance due to beyond design basis inputs
- Without beyond design basis inputs SDP would be very low safety significance

Analytical Inputs to the PRA Model and PRA Results

- Rick Rohrer
 - Fleet Program Engineering Manager
- Xcel Energy Team – Ops, Engr, Fleet
- Consultants – Maracor, Stevenson & Associates, Others

Internal Flooding Significance



Flood Propagation Analysis

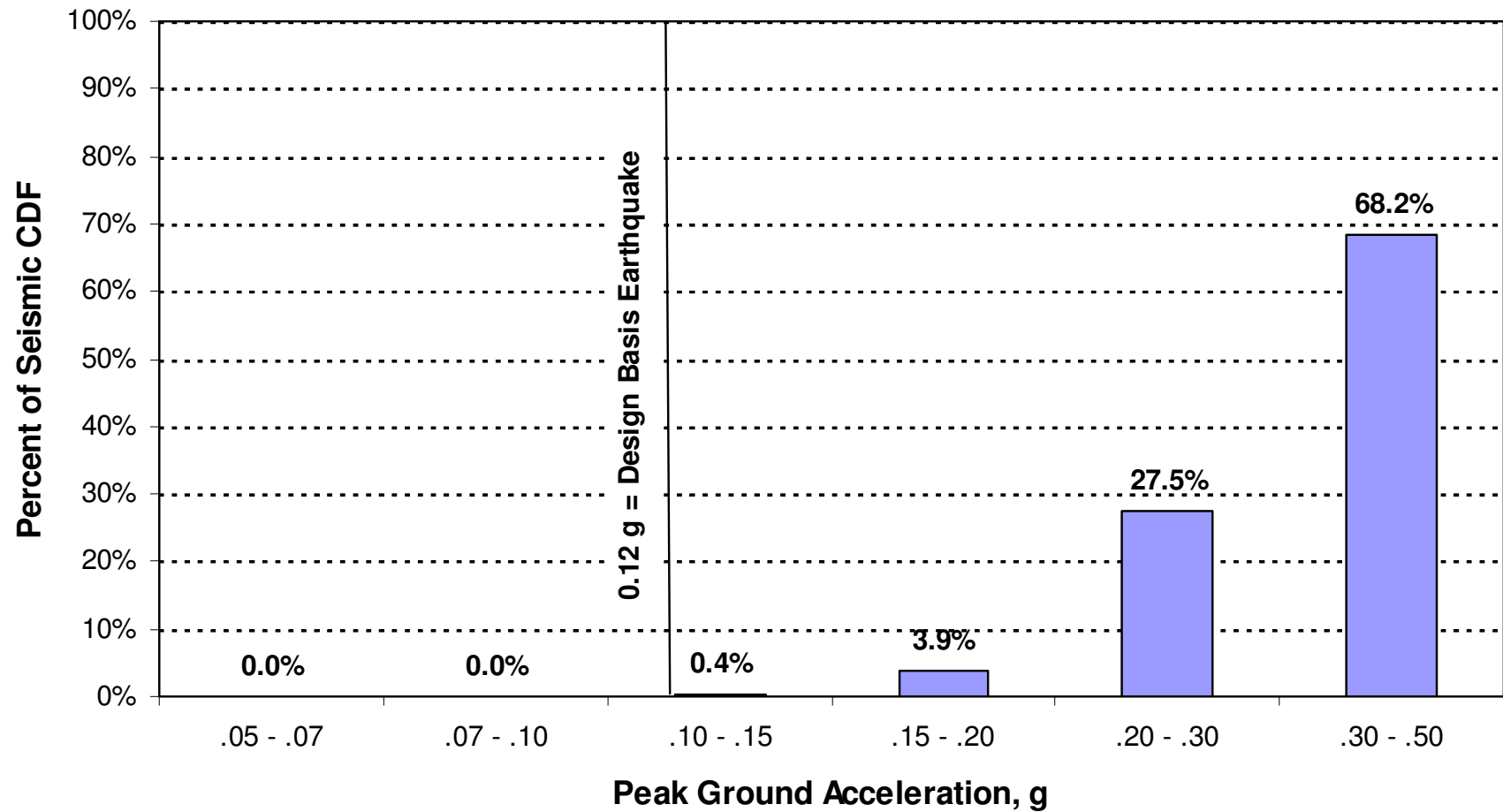
- Critical Flood Heights
- GOTHIC Model
- Compartment volumes, door gaps, openings, and elevations.
- Release paths to outdoors, other buildings
 - Personnel doors
 - Truckway roll-up doors
- Timing to reach critical flood heights
- Screened out < 5,000 gpm



Seismic Analysis

- EPRI 1016736 Uniform Hazard Spectra.
- Walkdowns, Cooling Water, Fire Protection.
- >130 seismic fragilities assigned.
- Detailed analysis for important components.
- Offsite Power Availability.

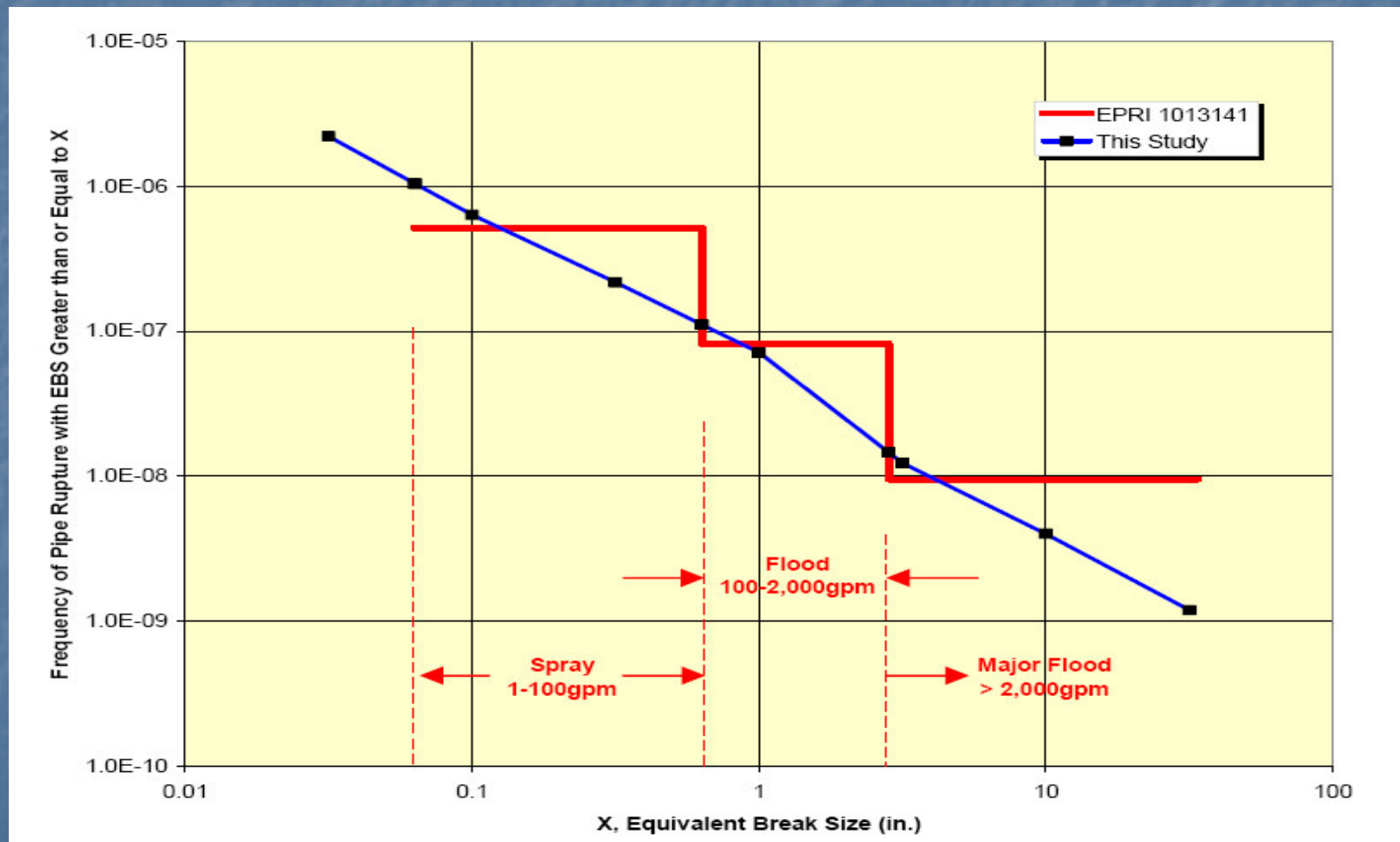
PINGP Unit 1 Turbine Bldg Seismic Flooding Risk (Total = 2.45E-6/yr)



Pipe Break Frequencies

- Used EPRI 1013141 data
- Continuous curve vs. stair-step.

Failure Rates for River Water Line > 10"

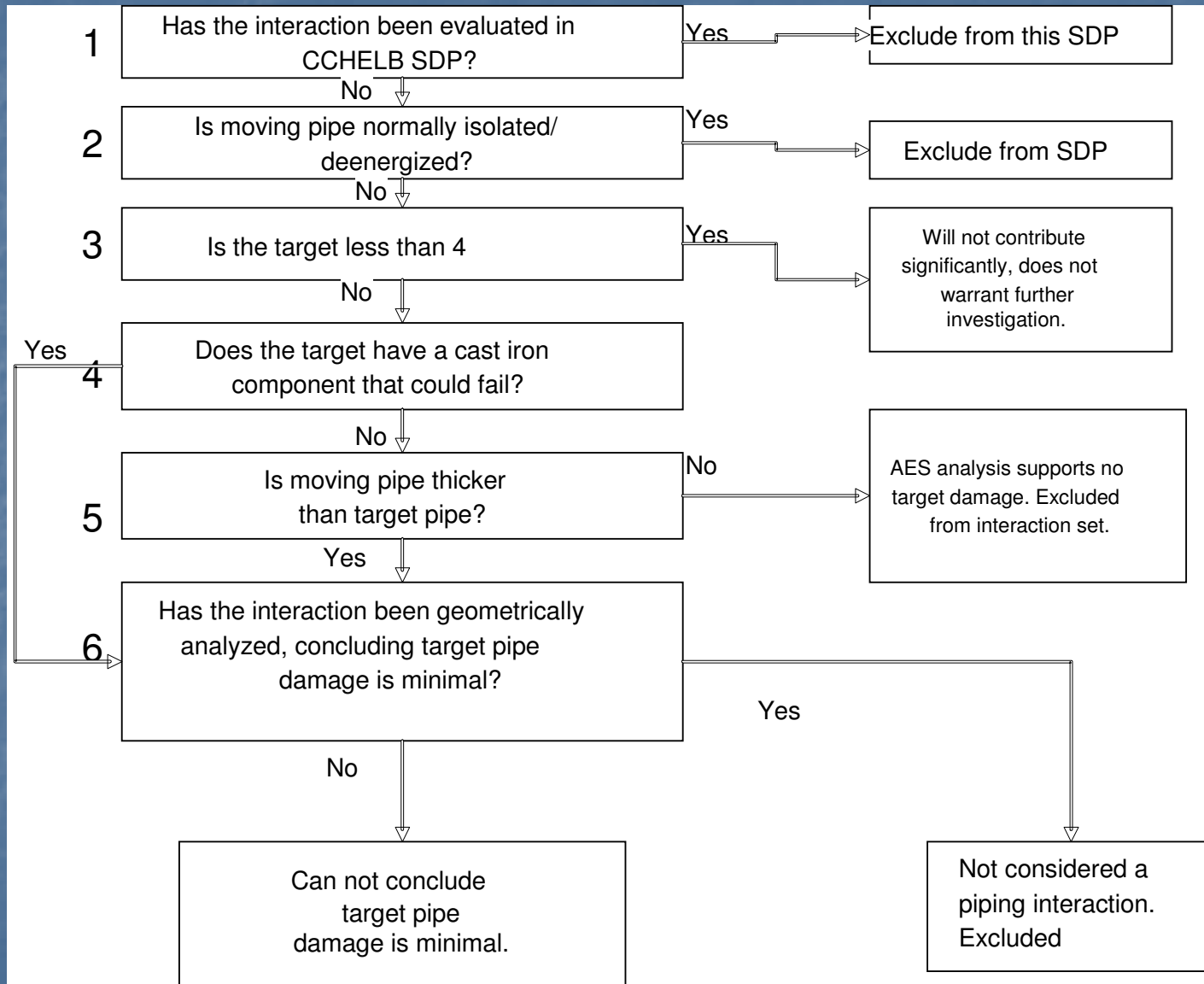


High Energy Line Breaks (HELBs)

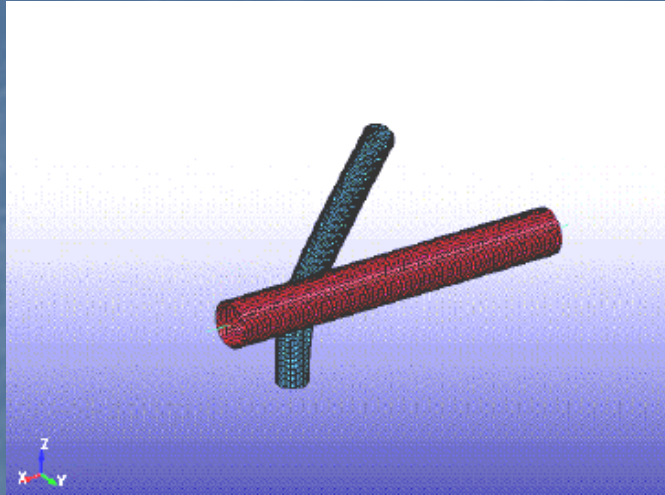
- Consequences
 - Energy release – habitability
 - Fire sprinkler actuations
 - Blow-out panel actuations
 - Pipe whip interactions
- Modeled using GOTHIC (different model than flooding model)

Habitability times

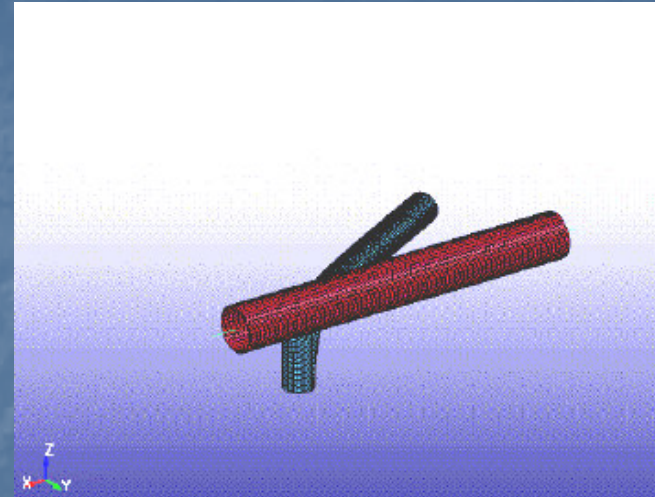
- Generally within 10 minutes due to sprinklers and blow-out panels.
- Smaller breaks more challenging – few sprinklers and few blow-out panels.
- Input to Human Reliability Analysis.



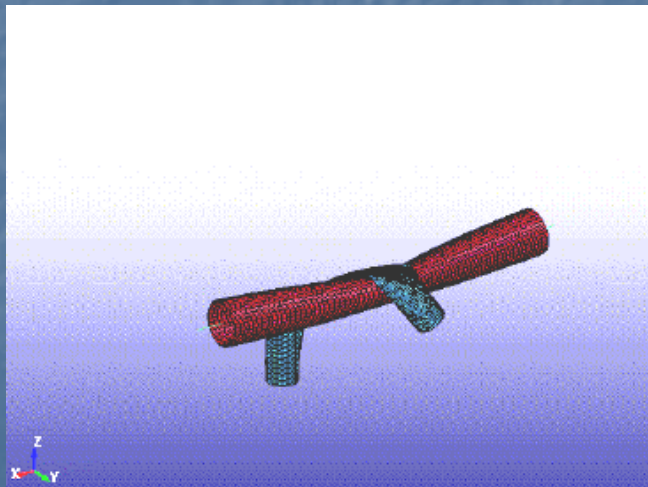
Pipe Whip Interaction – Case 5



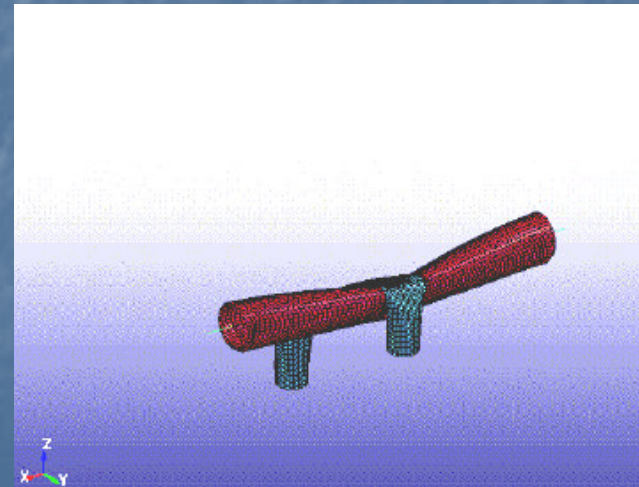
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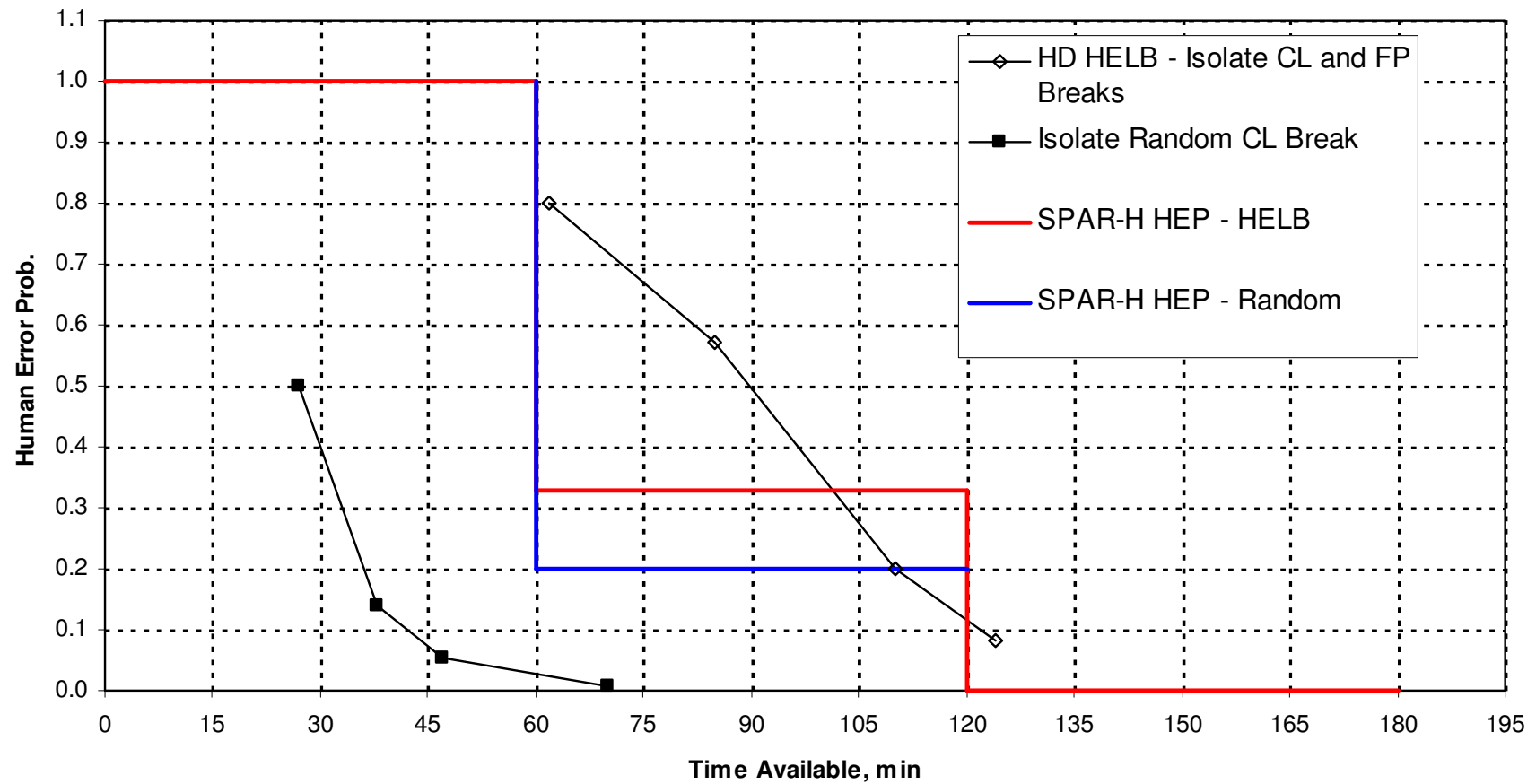


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Human Reliability Analysis

- EPRI HRA Calculator Software
- Human Cognitive Reliability / Operator Reliability Experiment (HCR/ORE) method.
- 72 Different HEPs calculated.

Influence of Challenges & Environment on HEP



Conservatism

- No credit for roll-up doors open in summer or northeast door blocked open
- Pipe whip analysis geometry
- No credit for personnel reporting flood, unless they were dispatched to investigate
- D1 & D2 failure when unit 1 condenser pit overfills
- HELB interactions that did not screen were assumed to cause significant damage to target.

Conclusions

- Delta-CDP in the low-to-moderate safety significance range
- Driven by seismic events beyond the design basis, and by moderately sized HELB interactions.

Root Cause and Actions to Prevent Recurrence

- Thomas Roddey
 - PINGP Engineering Design Manager
- Results of root cause evaluation
- Interim measures to assure compliance
- Ongoing actions

Root Causes

- Root Cause 1
 - An incorrect mindset was developed that large internal flooding events in the Turbine Building could be mitigated by operator action and plant design.
- Root Cause 2
 - Management oversight and resolution of identified Turbine Building HELB and flooding issues were lacking.

Contributing Causes

- Contributing Cause 1
 - Review of some Operating Experience failed to identify the significance of HELB induced secondary sources of flooding in the turbine building.
- Contributing Cause 2
 - Lack of comprehensive knowledge or understanding of the Licensing and Design basis for Turbine Building Flooding and Turbine Building HELB contributed to the problem.

Actions to Prevent Recurrence

- Root Cause #1
 - Develop and approve design and licensing basis for Turbine Building flooding.
 - Conduct training needs analysis for licensing and design basis.
 - Conduct training based on the needs analysis.

Actions to Prevent Recurrence

- Root Cause #2
 - Revised procedures governing Project Review Group (PRG) to increase station senior management oversight.
 - Licensing and design basis non-conformance issues receive highest priority ranking.
 - Improve governance and oversight of fleet program implementation.
 - Develop Engineering Programs standard and conduct gap analysis.
 - Develop an improvement plan and document actions in CAP.
 - Present improvement plan Plant Health Committee.
 - Establish performance indicators for monitoring.

Interim measures

- Opened Turbine Building roll-up doors
- Installed flood barriers
- Secured valve access covers

Additional Actions

- Revise fleet guidance to include extent of condition in reviewing Operating Experience.
- Evaluate Auxiliary Building and Screen House for unanalyzed sources of internal flooding.
- Finalize station design.

Conclusions

Prairie Island has thoroughly evaluated the issues related to legacy design weaknesses and developed effective corrective actions to prevent recurrence.

Conclusions (Cont.)

- The corrective actions assure that:
 - The station's licensing and design basis for flooding is well documented and understood by program owners.
 - Management oversight of Engineering Programs is improved and sustained.
 - Proper prioritization is given to legacy design issues and resources are dedicated to promptly resolving them.

Closing Remarks

- Mark Schimmel
 - Internal flooding program improvement is required and resources will be allocated to accomplish
 - SDP risk contribution is predominantly from beyond design basis events
 - Research has determined that we have in the past and continue to meet or exceed our licensing commitments
 - Plant design changes have continued to improve margin in risk from internal flooding

Closing Remarks

Executive Closing Comments

Questions?